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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Rainer Durth

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EXAMINER

KITOV, ZEEV

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/500,353	Applicant(s) DURTH ET AL.	
	Examiner Zeev Kitov	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15 - 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15 - 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is in a following limitation “an outer pressure cylinder”. The cylinder is neither shown in the Drawings, nor disclosed properly in the Specification. Its properties are unknown and its interaction with the housing is not clear. It is not clear why the housing itself cannot perform this role.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, “an outer pressure cylinder” of Claim 29 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure

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is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 18, 30 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Fussell (US 4,023,071). Regarding Claims 15 and 30, it discloses following elements: a first overvoltage protection element (upper part of element 50 in Fig. 3) connected in a first leg of the power supply system; and a second overvoltage protection element connected in a second leg of the power supply system, the second overvoltage protection element (bottom part of element 50 in Fig. 3) being coupled to the first overvoltage protection element so that the second overvoltage protection

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element ignites when the first overvoltage protection element ignites and the first overvoltage protection element ignites when the second overvoltage protection element ignites (col. 6, lines 4 – 22).

Regarding Claim 18, Fussell discloses the first and second overvoltage protection elements being disposed in a common housing (50 in Fig. 3, (col. 6, lines 4 – 22).

Regarding Claim 33, Fussell discloses the first overvoltage protection element includes a first air breakdown spark gap (between upper and central electrodes of 50 in Fig. 3); and the second overvoltage protection element includes a second air breakdown spark gap (between bottom and central electrodes of 50 in Fig. 3); wherein the first and second air breakdown spark gaps are disposed in a common housing so that a first plasma produced upon an igniting of the first air breakdown spark gap ignites the second air breakdown spark gap and a second plasma produced upon an igniting of the second air breakdown spark gap ignites the first air breakdown spark gap (50 in Fig. 3, (col. 6, lines 4 – 22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16, 17, 20, 21, 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Cook (US 4,683,514). As was stated above, Fussell discloses all the elements of Claims 15 and 30. However, regarding Claims 16 and 32, it does not disclose ignition aids and a low voltage system. Cook discloses the ignition aid (29, 41, 33, 35, 39, 37 in Fig. 2) associated with an individual overvoltage protection element (21 in Fig. 2). Application of the ignition aid concept to multiphase system, such as shown in Fig. 3 of Fussell, protected by two individual protection elements will result in two separate ignition aids, each associated with its own protection element. Both references have the same problem solving area, namely providing an overvoltage protection by using the arc gap devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Fussell solution by providing individual ignition aid to each of Fussell protection devices, because as Cook states (col. 1, lines 22 – 40), it is necessary to resolve a problem of protection against relatively low voltages, such lower than 300 volts. When using different ignition aid devices for triggering different protection devices associated with different phases of the power system, a timing of their firing becomes an issue (col. 6, lines 4 – 22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fussell solution by connecting all triggering electrodes (37 in Fig. 2 of Cook) to a common ignition aid triggering circuit (29, 41, 33, 35 in Fig. 2 of Cook), because (I) it would reduce parts count and therefore a cost of the system, (II) according to Fussell (col. 6, lines 4 – 22), the protection devices should be triggered simultaneously since otherwise

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appearance of a transverse voltage across the unfired device and full protection would not be achieved.

Regarding Claims 17 and 21, implementation of modification discussed above (see rejection of Claims 16, 31, 32) will result in formation of the circuit wherein the central ignition aid (29, 41, 33, 35 in Fig. 2 of Cook) being connected to ignition electrodes of both protection elements. A motivation for modification of the primary reference is the same as above.

Regarding Claim 20, implementation of connection discussed above (see rejection of Claims 16, 31, 32) will result in the circuit wherein the first ignition aid includes a first ignition electrode (37 in Fig. 2 of Cook) and a first ignition circuit (29, 41, 33, 35 in Fig. 2 of Cook), connected to the first ignition electrode; and the second ignition aid includes a second ignition electrode (37 in Fig. 2 of Cook) and a second ignition circuit (29, 41, 33, 35 in Fig. 2 of Cook) connected to the second ignition electrode. Formation of such circuit is discussed above (see rejection of Claims 16, 31, 32). A motivation for modification of the primary reference is the same as above.

Regarding Claim 31, Cook discloses the low voltage system. A motivation for modification of the primary reference is the same as above.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Motoori (US 5,272,588). Regarding Claim 19, Fussell discloses following elements: the first overvoltage protection element including a first and a second electrodes (the upper terminal and the upper surface of the central terminal in Fig. 3)

with a first air breakdown spark gap therebetween; and the second overvoltage protection element including a third and a fourth electrodes (the bottom terminal and the bottom part of the central terminal in Fig. 3) with a second air breakdown spark gap therebetween; wherein the first, second, third and fourth electrodes are disposed so that the second air breakdown spark gap ignites when the first air breakdown spark gap ignites and the first air breakdown spark gap ignites when the second air breakdown spark gap ignites due to a presence of a plasma (col. 6, lines 4 – 22). However, it does not disclose individual separated second and fourth electrodes. Motoori discloses two arc gap protection devices (114 in Fig. 3) in common housing including the first and the second electrodes (119 and 120 in Fig. 3) and third and the fourth electrodes (121 and 122 in Fig. 3) accordingly. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Fussell solution by adding separated second and fourth electrodes to the first and second overvoltage protection elements according to Motoori, since according to Court Decision, it has been that mere duplication of the essential working parts of a device involves only routine skill in the art. See *St Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Motoori and Hill et al. (US 3,878,423). As was stated above, Fussell and Motoori disclose all the elements of Claims 15 and 19. However, regarding Claims 22 and 24, they do not disclose coaxially disposed electrodes. Hill et al. disclose a surge-protecting device having the coaxially disposed electrodes with varying cross-

section over a length of the electrode (84 and 82 in Fig. 5). In the Fussel system modified according to Motoori and Hill et al., both the first and the second electrodes as well as the third and the fourth electrodes will be coaxially disposed and will have respective varying cross-section over a length of the respective electrode. Both references have the same problem solving area, namely providing the surge protecting device by using the arc gap technology. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fussel solution by adding the coaxially placed electrodes with varying cross section according to Hill et al., because as Hill et al. state (col. 6, lines 20 – 29, 41 – 63), such structure has advantage of minimizing the amount of sputtered material thus extending the lifetime of the device.

Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Motoori and Hill et al. and Cook. As per Claims 23 and 25, they differ from Claims 22 and 24 rejected above by the limitations of presence of the ignition electrodes. Cook discloses the ignition aid (29, 41, 33, 35, 39, 37 in Fig. 2) associated with an individual overvoltage protection element (21 in Fig. 2). Application of the ignition aid of Cook the Fussel system modified according to Motoori and Hill et al., will result in the system having the first ignition electrode disposed coaxially with respect to the first and the second electrodes and second ignition electrode disposed coaxially to the third and fourth electrodes, while the ignition electrodes will have varying cross-section according to Hill et al. Therefore, it would have been obvious to one of ordinary

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skill in the art at the time the invention was made to have modified the Fussell solution by providing individual ignition aid to each of Fussell protection devices, because as Cook states (col. 1, lines 22 – 40), it is necessary to resolve a problem of protection against relatively low voltages, such lower than 300 volts.

Claims 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Cook and Altmaler et al. (US 5,754,385). As was stated above, Fussell and Cook disclose all the elements of Claims 15 and 18. However, regarding Claims 26 and 27, they do not disclose a housing including a lining and POM material. Altmaler et al. disclose the housing surrounding the electrodes and including a lining with POM Teflon (col. 17 – 23). Both references have the same problem solving area, namely providing high voltage protection by using the arc gap devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fussell solution by adding the housing made of lining with POM Teflon according to Altmaler et al., because as Altmaler et al. state (col. 17 – 23), such housing does not release carbon when it is heated or it burns.

Claims 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Cook and Cwirzen et al. (US 4,613,732). As was stated above, Fussell and Cook disclose all the elements of Claims 15 and 18. However, regarding Claims 26 and 27, they do not disclose a sealed housing. Cwirzen et al. disclose the housing surrounding the electrodes and having a sealed, pressure-tight design (col. 4, lines 60 –

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68). Both references have the same problem solving area, namely providing a high voltage protection by using the arc gap devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fussell solution by adding the sealed pressure-tight designed housing according to Cwirzen et al., because as Cwirzen et al. state (col. 4, lines 63 – 68), If the protector leaks, the breakdown voltage of particular protector becomes slightly higher voltage than that of other protectors, which may cause a problem of not simultaneous ignition in different protectors.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fussell in view of Cook, Cwirzen et al. and Eldridge et al. (US 2,664,518). As was stated above, Fussell, Cook and Cwirzen et al. disclose all the elements of Claims 15, 18 and 28. However, regarding Claim 29, they do not disclose an outer pressure cylinder. Eldridge et al. disclose the housing having the outer pressure cylinder (11 in Fig. 1, col. 3, lines 41 – 51). Both references have the same problem solving area, namely protecting against high voltages by using arc gap devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Fussell solution by adding the outer pressure cylinder according to Eldridge et al., because the cylinder is necessary (I) to mechanically reinforce the device to withstand a high pressure of gas and (II) it is used for electrically grounding the device to discharge the dynamic current to the ground (col. 3, lines 41 – 51, col. 2, lines 25 - 31).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

Z.K.
10/14/2005



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